

EJERCICIOS RADICALES

FICHA 3

Calcula y simplifica:

a) $\sqrt{4} \cdot \sqrt{12} \cdot \sqrt{3}$

b) $\sqrt[4]{2^3} \cdot \sqrt{2} \cdot \sqrt[3]{2^5}$

c) $3\sqrt{72} : 2\sqrt{9}$

d) $5\sqrt{5} - \sqrt{80} + 3\sqrt{20}$

e) $27 + 3\sqrt{8} - \sqrt{112} + 4\sqrt{20}$

f) $(2\sqrt{3})^2$

g) $(2\sqrt[3]{5})^3$

h) $(\sqrt{2} + \sqrt{3})^2$

i) $(1 + \sqrt{5})(2 - \sqrt{5})$

j) $\sqrt{2^3 \sqrt{2^3} \sqrt{2}}$

SOLUCIONES

$$\text{a) } \sqrt{4} \cdot \sqrt{12} \cdot \sqrt{3} = \sqrt{2^2 \cdot 2^2 \cdot 3 \cdot 3} = \sqrt{2^2 \cdot 2^2 \cdot 3^2} = 2 \cdot 2 \cdot 3 = 12$$

$$\text{b) } \sqrt[4]{2^3} \cdot \sqrt{2} \cdot \sqrt[3]{2^5} = \sqrt[12]{2^9} \cdot \sqrt[12]{2^6} \cdot \sqrt[12]{2^{20}} = \sqrt[12]{2^{35}} = \sqrt[12]{2^{12} \cdot 2^{12} \cdot 2^{11}} = 4\sqrt[12]{2^{11}}$$

$$\text{c) } 3\sqrt{72} : 2\sqrt{9} = \frac{3\sqrt{2^3 \cdot 3^2}}{2\sqrt{3^2}} = \frac{3\sqrt{2^2} \cdot \sqrt{2} \cdot \sqrt{3^2}}{2 \cdot 3} = \frac{3 \cdot 2 \cdot 3\sqrt{2}}{2 \cdot 3} = 3\sqrt{2}$$

$$\text{d) } 5\sqrt{5} - \sqrt{80} + 3\sqrt{20} = 5\sqrt{5} - \sqrt{2^4 \cdot 5} + 3\sqrt{2^2 \cdot 5} = 5\sqrt{5} - 4\sqrt{5} + 6\sqrt{5} = 7\sqrt{5}$$

$$\begin{aligned} \text{e) } 2\sqrt{7} + 3\sqrt{8} - \sqrt{112} + 4\sqrt{20} &= 2\sqrt{7} + 3\sqrt{2^3} - \sqrt{2^4 \cdot 7} + 4\sqrt{2^2 \cdot 5} = \\ &= 2\sqrt{7} + 3 \cdot 2\sqrt{2} - 4\sqrt{7} + 8\sqrt{5} = 6\sqrt{2} + 8\sqrt{5} - 2\sqrt{7} \end{aligned}$$

$$\text{f) } (2\sqrt{3})^2 = 2^2 \sqrt{3^2} = 2^2 \cdot 3 = 12$$

$$\text{g) } (2\sqrt[3]{5})^3 = 2^3 \sqrt[3]{5^3} = 2^3 \cdot 5 = 40$$

$$\text{h) } (\sqrt{2} + \sqrt{3})^2 = \sqrt{2^2} + 2\sqrt{2} \cdot \sqrt{3} + \sqrt{3^2} = 2 + 2\sqrt{6} + 3 = 5 + 2\sqrt{6}$$

i)

$$(1 + \sqrt{5})(2 - \sqrt{5}) = 1 \cdot 2 - 1 \cdot \sqrt{5} + 2 \cdot \sqrt{5} - \sqrt{5} \cdot \sqrt{5} = 2 - \sqrt{5} + 2\sqrt{5} - 5 = \sqrt{5} - 3$$

$$\text{j) } \sqrt{2^3 \sqrt{2^3} \sqrt{2}} = \sqrt{2^3 \sqrt{2^6 \cdot 2}} = \sqrt{2^6 \sqrt{2^7}} = \sqrt{2^6 \sqrt{2^6 \cdot 2^1}} = \sqrt[12]{2^{13}} = 2\sqrt[12]{2}$$